

IN THE CLAIMS:

Please amend the claims as follows:

1. (original): A sputter transport device comprising:
  - (a) a sealable, pressure-controlled chamber defining an interior space;
  - (b) a target cathode disposed in the chamber;
  - (c) a magnetron assembly disposed in the chamber proximate to the target cathode;
  - (d) a substrate holder disposed in the chamber and spaced at a distance from the target cathode; and
  - (e) a negatively-biased, non-thermionic electron/plasma injector assembly disposed between the target cathode and the substrate holder.
2. (original): The device according to claim 1 comprising a reactive gas supply source fluidly communicating with the chamber.
3. (original): The device according to claim 2 wherein the reactive gas supply source is adapted to supply a gas to the chamber, and the gas includes a component selected from the group consisting of nitrogen, oxygen, and hydrogen.

Serial No.: 09/997,162

4. (original): The device according to claim 1 comprising a background gas supply source fluidly communicating with the chamber.
5. (original): The device according to claim 4 wherein the background gas supply source is adapted to supply a gas including argon.
6. (original): The device according to claim 1 wherein the target cathode is negatively biased.
7. (original): The device according to claim 1 wherein the target cathode has a circular configuration.
8. (original): The device according to claim 1 wherein the target cathode has a rectilinear configuration.
9. (original): The device according to claim 1 wherein the target cathode is constructed from a material selected from the group consisting of conducting, semiconducting, and insulating materials.
10. (original): The device according to claim 1 wherein the target cathode has a composition including a Group III material.

Serial No.: 09/997,162

11. (original): The device according to claim 10 wherein the Group III material is selected from the group consisting of aluminum, gallium, indium, and binary, ternary, and quaternary alloys and compounds thereof.
12. (original): The device according to claim 1 wherein the target cathode includes zinc.
13. (original): The device according to claim 1 comprising a heat exchanger system adapted to circulate a heat transfer medium to remove heat from the target cathode.
14. (original): The device according to claim 1 comprising a target cathode holder disposed in the chamber, wherein the target cathode is supported by the target cathode holder.
15. (original): The device according to claim 14 wherein the target cathode holder is cup-shaped and the target cathode comprises a liquid-phase component.

Serial No.: 09/997,162

16. (original): The device according to claim 15 wherein the target cathode holder is constructed from a material selected from the group consisting of metallic and insulating materials.
17. (original): The device according to claim 15 wherein the target cathode holder is constructed from a component selected from the group consisting of molybdenum and stainless steel.
18. (original): The device according to claim 14 comprising a voltage source communicating with the target cathode holder, wherein the target cathode is negatively biased.
19. (original): The device according to claim 14 comprising a heat exchanger system adapted to circulate a heat transfer medium to remove heat from the target cathode holder.
20. (original): The device according to claim 14 in which the target cathode holder is heated.
21. (original): The device according to claim 1 wherein the magnetron assembly is cooled.

Serial No.: 09/997,162

22. (original): The device according to claim 1 wherein the magnetron assembly has a circular configuration.
23. (original): The device according to claim 1 wherein the magnetron assembly has a rectilinear configuration.
24. (original): The device according to claim 1 wherein the magnetron assembly includes a plurality of magnets including a centrally disposed magnet and a radially disposed magnet oppositely poled with respect to the centrally disposed magnet.
25. (original): The device according to claim 1 wherein the magnetron assembly includes a plurality of magnetron magnets arranged in an unbalanced configuration.
26. (original): The device according to claim 1 wherein the substrate holder is negatively biased.
27. (original): The device according to claim 1 wherein the injector assembly is constructed from the same material as the target cathode.

Serial No.: 09/997,162

28. (original): The device according to claim 1 wherein the injector assembly is constructed from a material different from the target cathode.
29. (original): The device according to claim 1 wherein the injector assembly has a circular configuration.
30. (original): The device according to claim 1 wherein the injector assembly has a linear configuration.
31. (original): The device according to claim 1 wherein each injector of the injector assembly includes a replaceable nozzle.
32. (original): The device according to claim 31 wherein each nozzle is constructed from the same material as the target cathode.
33. (original): The device according to claim 31 wherein each nozzle is constructed from a material different from the target cathode.
34. (original): The device according to claim 1 comprising an injector assembly holder secured to the injector assembly and adapted to

Serial No.: 09/997,162

circulate a heat transfer medium to remove heat from the injector assembly.

35. (original): The device according to claim 1 wherein the injector assembly comprises a plurality of hollow cathode injectors disposed in fluid communication with a gas source, each injector including an orifice communicating with the interior space of the chamber
36. (original): The device according to claim 35 wherein the injector assembly comprises:
  - (a) a main body having a generally annular orientation with respect to a central axis and including a process gas section and a cooling section, the process gas section defining a process gas chamber and the cooling section defining a heat transfer fluid reservoir; and
  - (b) a plurality of gas nozzles removably disposed in the main body in a radial orientation with respect to the central axis and in heat transferring relation to the heat transfer fluid reservoir, each gas nozzle providing fluid communication between the process gas chamber and a region exterior to the main body.

Serial No.: 09/997,162

- 37. (original): The device according to claim 1 comprising a containment shield and a containment magnet, the containment shield disposed between the target cathode and the substrate holder and the containment magnet disposed adjacent to the containment shield.
- 38. (original): The device according to claim 37 wherein the containment shield is negatively biased.
- 39. (original): The device according to claim 37 wherein the containment shield is constructed from the same material as the target cathode.
- 40. (original): The device according to claim 37 wherein the containment shield is constructed from a material different from the target cathode.
- 41. (original): The device according to claim 37 wherein the containment shield is constructed from aluminum.
- 42. (original): An electron/plasma injector assembly adapted for non-thermionically supplying plasma to a reaction chamber, the injector assembly comprising:
  - (a) a main body having a generally annular orientation with respect to a central axis and including a process gas section and a



Serial No.: 09/997,162

cooling section, the process gas section defining a process gas chamber and the cooling section defining a heat transfer fluid reservoir; and

- (b) a plurality of gas nozzles removably disposed in the main body in a radial orientation with respect to the central axis and in heat transferring relation to the heat transfer fluid reservoir, each gas nozzle providing fluid communication between the process gas chamber and a region exterior to the main body.

43 – 56. (canceled)

57. (previously presented): The device according to claim 42 wherein each injector of the injector assembly includes a replaceable nozzle.

58 – 59. (canceled)

60. (previously presented): The device according to claim 42 comprising an injector assembly holder secured to the injector assembly and adapted to circulate a heat transfer medium to remove heat from the injector assembly.

61. (previously presented): A sputter transport device comprising:

- (a) a sealable, pressure-controlled chamber;
- (b) a target cathode holder disposed in the chamber;
- (c) a magnetron assembly disposed in the chamber proximate to the target cathode;
- (d) a substrate holder disposed in the chamber and spaced at a distance from the target cathode holder; and
- (e) a negatively-biased, non-thermionic electron/plasma injector assembly disposed between the target cathode and the substrate holder, the injector assembly comprising:
  - (i) a main body having a generally annular orientation with respect to a central axis and including a process gas section and a cooling section, the process gas section defining a process gas chamber and the cooling section defining a heat transfer fluid reservoir; and
  - (ii) a plurality of gas nozzles removably disposed in the main body in a radial orientation with respect to the central axis and in heat transferring relation to the heat transfer fluid reservoir, each gas nozzle providing fluid communication between the process gas chamber and a region exterior to the main body.

Serial No.: 09/997,162

- 62. (previously presented): The device according to claim 61 wherein the target cathode holder is negatively biased.
- 63. (previously presented): The device according to claim 61 comprising a heat exchanger system adapted for circulating a heat transfer medium to remove heat from the target cathode.
- 64. (previously presented): The device according to claim 61 wherein the target cathode holder is generally cup-shaped and supports a target cathode comprising a liquid-phase component.
- 65. (previously presented): The device according to claim 61 wherein the target cathode holder supports a target cathode.
- 66. (previously presented): The device according to claim 65 wherein the target cathode comprises a Group III material.
- 67. (previously presented): The device according to claim 66 wherein the Group III material is selected from the group consisting of aluminum, gallium, indium, and binary, ternary, and quaternary alloys and compounds thereof.

Serial No.: 09/997,162

- 68. (previously presented): The device according to claim 65 wherein the injector assembly is constructed from the same material as the target cathode.
- 69. (previously presented): The device according to claim 65 wherein the injector assembly is constructed from a material different from the target cathode.
- 70. (previously presented): The device according to claim 61 wherein each injector of the injector assembly includes a replaceable nozzle.
- 71. (previously presented): The device according to claim 70 wherein each nozzle is constructed from the same material as a target cathode supported by the target cathode holder.
- 72. (previously presented): The device according to claim 70 wherein each nozzle is constructed from a material different from a target cathode supported by the target cathode holder.
- 73. (previously presented): The device according to claim 61 comprising an injector assembly holder secured to the injector assembly and

Serial No.: 09/997,162

adapted to circulate a heat transfer medium to remove heat from the injector assembly.